IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

LG. PHILIPS LCD CO., LTD.,	)	
	)	
Plaintiff,	)	**C.A. No. 05-292 (JJF)**
	)	
v.	)	
	)	
TATUNG COMPANY;	)	
TATUNG COMPANY OF AMERICA, INC.;	)	
CHUNGHWA PICTURE TUBES, LTD.;	)	
AND VIEWSONIC CORPORATION,	)	
	)	
Defendants.	)	
	)	

DEFENDANTS' OPENING BRIEF IN SUPPORT OF THEIR
PROPOSED CLAIM CONSTRUCTIONS

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I. INTRODUCTION

Defendants, Chunghwa Picture Tubes, Ltd., Tatung Company, Tatung Company of America and ViewSonic Corporation (collectively, "CPT") hereby submit their Opening Brief in Support of Their Proposed Claim Constructions for U.S. Patent Nos. 5,019,002 ("the '002 patent") and 6,738,121 B2 ("the '121 patent"). Exhibits 2 and 8 list the disputed claim terms for the '002 and '121 patents, respectively.

II. CLAIM CONSTRUCTION GUIDELINES

Claim construction is a matter of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977-78 (Fed. Cir. 1995) (*en banc*), *aff'd*, 517 U.S. 370 (1996); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005), *cert. denied*, No. 05-602, 2006 U.S. LEXIS 1154 (Feb. 21, 2006). The plain meaning of a claim term is determined through the lens of one of ordinary skill in the art. In making this determination, both intrinsic and extrinsic evidence may be considered. *Id.*, at 1313-17. The intrinsic record includes the "patent itself, including the claims, the specification and, if in evidence, the prosecution history." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). The specification is "always highly relevant" and is often "dispositive; it is the single best guide to the meaning of a disputed term." *Id.* Extrinsic evidence, on the other hand, includes "expert and inventor testimony, dictionaries, and learned treatises." *Phillips*, 415 F.3d at 1317. Although extrinsic evidence may be useful in understanding the technology-at-hand, its reliability is only assured when "considered in the context of the intrinsic evidence." *Id.*, at 1319.

III. CLAIM CONSTRUCTIONS FOR THE '002 PATENT

The '002 patent, Ex. 1, relates to methods for protecting flat panel displays from damage caused by electrostatic discharge. The primary application is for active matrix liquid crystal display ("LCD") panels.

A. Background Technology

1. LCD Panels and Pixels

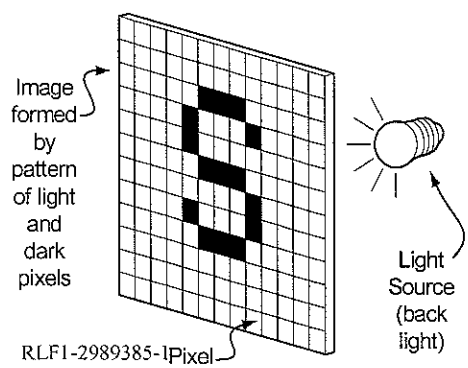

Fig. 1

An LCD panel usually consists of two glass sheets, called substrates, from which the frontplane

and backplane are formed. Howard Decl.[1] ¶ 4. A thin film of liquid crystal is sandwiched between the two glass substrates. *Id.*

The display surface is divided into an array of tiny picture elements or pixels that together form a visible image. *Id.*, ¶ 5. Each pixel can be made light or dark in order to display the desired image. *Id.* The brightness of each pixel is determined by the amount of light transmitted through the liquid crystal. *See* Fig. 1; Howard Decl. ¶ 5. The liquid crystal can be transparent or opaque to light, depending on its charging state. *Id.*, ¶ 6.

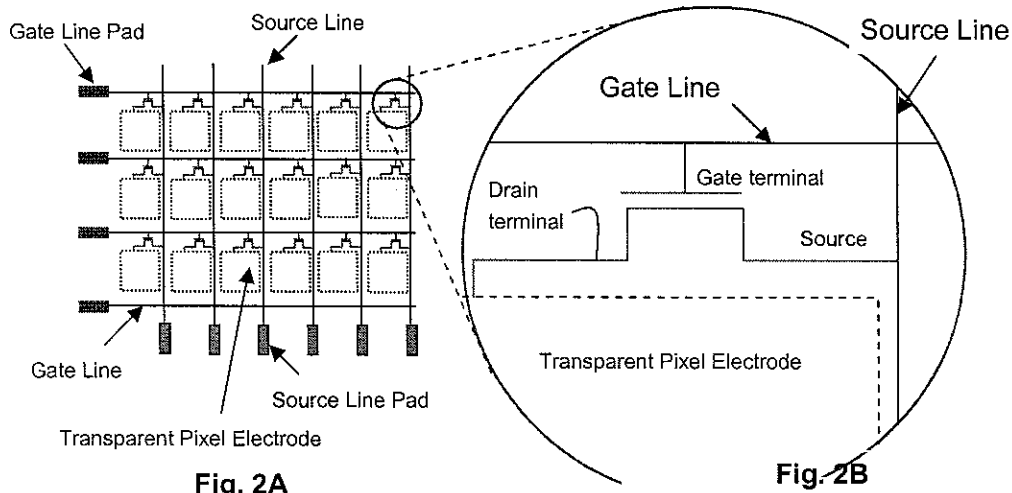

Fig. 2A

Fig. 2B (Pixel Transistor)

The charging of the liquid crystal within a pixel is carried out through transparent conductor pads called pixel electrodes.[2] *Id.* Figure 2A, above, shows a schematic illustration of a portion of an LCD panel consisting of several rows and columns of pixel electrodes. *Id.*, ¶ 7. An electrical signal applied to a pixel electrode will energize the liquid crystal adjacent to the electrode. *Id.* This alters the transparency of the liquid crystal, thereby changing the brightness of the corresponding pixel on the display. *Id.* This charging process of the liquid crystal is typically controlled by a pixel transistor. *Id., see* Fig. 2B.

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[1] Declaration of Webster Howard, Ph.D., in Support of Defendants' Claim Construction (hereinafter "Howard Decl.")

[2] The '002 patent refers to pixel electrodes as "contact pads." (Ex. 1, Fig. 1, item 24, 4:44. This transparent conductor material is indium tinoxide ("ITO").

2. The Pixel Transistor and Its Gate and Source Control Lines

A pixel transistor, which is called a thin film transistor ("TFT"), turns on or shuts off the electrical circuit that connects to the pixel electrode as shown in Fig. 2B. Howard Decl. ¶ 8. It has three terminals: source, gate, and drain. Fig. 2B; Howard Decl. ¶ 8. A sufficient voltage on the gate terminal switches on the current pathway between the drain and source terminals, similar to flipping a switch to turn on a light bulb. That is why transistors are sometimes called switching devices or switching elements. Howard Decl. ¶ 8.

As shown in Fig. 2A, in an LCD panel, pixel transistors are controlled by two groups of conductor lines arranged perpendicularly to each other. *Id.*, ¶ 9. The horizontal lines, or rows, are sometimes called gate lines[3]. *Id.* Each gate line is connected to the gate terminals of all pixel transistors in one row and is used to control the gate voltage of these transistors, as shown in Figs. 2A & B. *Id.* The vertical control lines, or columns, are sometimes called source lines.[4] *Id.* Each source line is connected to the source terminals of all pixel transistors in one column, and thus controls the voltage applied to the sources for these transistors. *Id.*

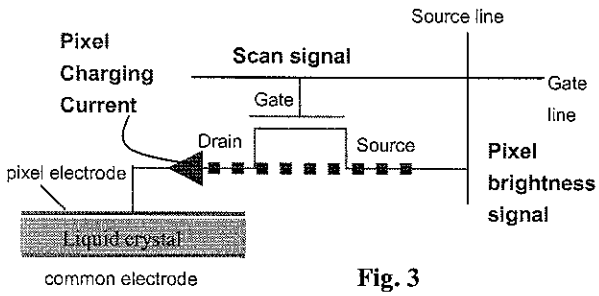

Fig. 3

As shown in Fig. 3, to electrically charge a pixel, the "scan signal" places a gate line at a high voltage state, which turns "on" all the TFTs connected to the gate line and opens the "gates" between the source and drain terminals of the TFTs. *Id.*, ¶ 10. When a TFT is turned on, the electrical signals on the source line for controlling pixel brightness can be passed from the source to the drain. This results in current flow into the pixel electrode, changing the pixels to the desired brightness level. *Id.*

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[3] They are also called "scan lines," because the gate lines are energized sequentially to scan row-by-row through all the pixels on the display.

[4] They are also called "data lines," because they conduct data to the TFT source terminals to determine the brightness for the corresponding pixel.

3. Electrostatic Discharge (ESD) and ESD Protective Measures

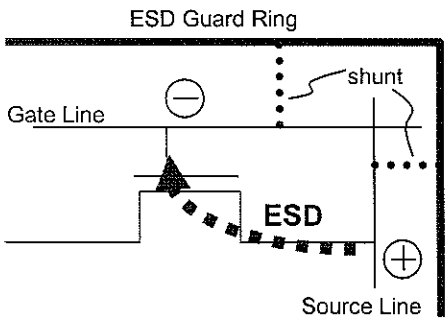

Fig. 4

The TFTs are subject to electrostatic discharge ("ESD") damage, especially during the manufacturing process. ESD is caused by a buildup of electrostatic voltage between the source and gate lines, as shown in Fig. 4. ESD damages a TFT by breaking down the insulating barrier between the gate and source, resulting in an ESD surge current between the gate and source. *Id.*, ¶ 11, Fig. 4. Over the years, the LCD industry and other related industries have developed various ways to minimize ESD damage. Howard Decl. ¶¶ 12-16. One such prior art method used an ESD guard ring to provide a shunt or bypass for electrostatic discharge between the column and row lines, as illustrated in Fig. 4. *Id.*, ¶ 14. The usual features of these ESD protective rings include a strip of conductor coupled to both the gate and source lines through "shunts," which are either short wires or switching devices. *Id.* Before the '002 patent, the prior art taught both removable ESD guard rings, which protect the TFTs during the manufacturing process, and permanent ESD guard rings. *Id.*, ¶¶ 15-16.

B. The Disclosure by the '002 Patent

The '002 patent discusses two methods of combating ESD. The first method uses a permanent ring of conductor, referred to as an "inner guard ring." The inner guard ring is coupled to each individual row (or column) separately through a shunt transistor. Ex. 1, 7:22-31. The shunt transistors "also can be formed as other active switching elements, such as diodes." *Id.*, 8:57-59. The inner ring can be an open or closed ring (L or C shaped). Fig. 5A, below, shows schematics of the inner guard ring, which is based on Fig. 5 of the '002 patent and the related text. Howard Decl. ¶ 18.

The shunt switching device turns on when there is a significant electrostatic voltage between the source and gate lines. Ex. 1, 7:37-41. This creates a short circuit path between the source and gate line through the inner guard ring, thus protecting the pixel transistor. *Id.*, 7:35-46.

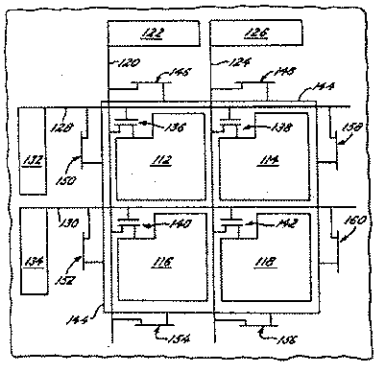

Fig. 5 of the '002 Patent

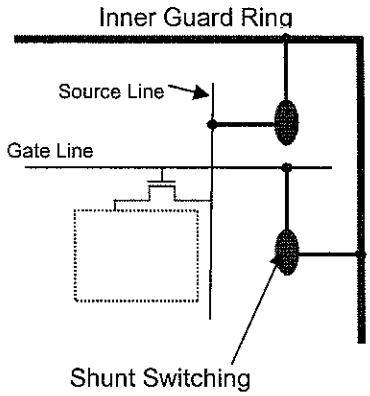

Fig. 5A

The '002 patent also describes a removable ESD guard ring, referred to as an "outer guard ring." Unlike the inner guard ring, the outer guard ring is not coupled to each of the individual source or gate lines, but instead is connected to source (or gate) lines that are interconnected together. *Id.*, 8:5-8; Howard Decl. ¶¶ 19-21. The connection between the outer guard ring and the interconnected rows and columns is made through one or more resistors (referred to as "resistance" by the patent). Ex. 1, 8:24-37, 9:5-10, Fig. 7.

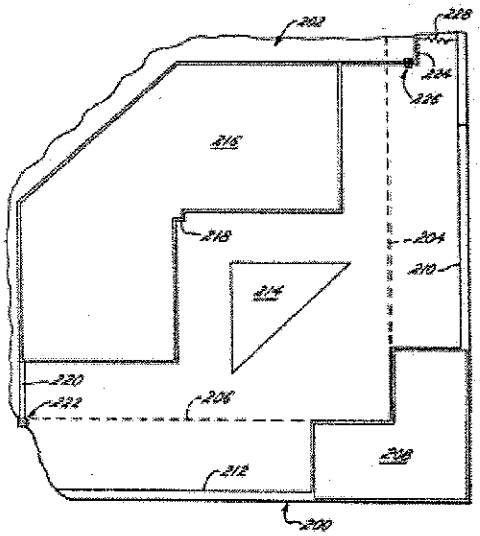

Fig. 7 of '002 Patent

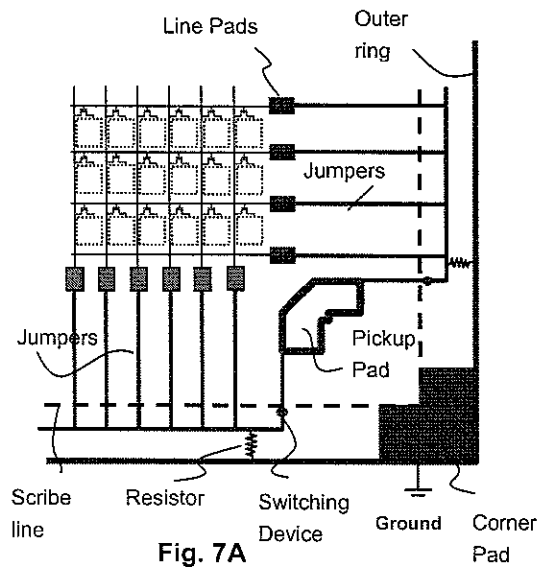

Fig. 7A

Fig. 7 of the '002 patent shows an outer ring consisting of outer conductive lines connected to one or more L-shaped corner pads, located at the corner(s) of the ring and electrically connected with the ring. *Id.*, 8:8-11. The corner pads are where the outer ring

may be grounded. *Id.*, 8:11-12. They also provide alignment for the scribe lines, which are used "to disconnect the source and gate jumpers and the guard ring **200** after the structure is completed." *Id.*, 8:11-16. Figure 7A (based on the patent's Fig. 7 and related descriptions) illustrates the outer guard ring and its connections. Howard Decl. ¶¶ 19-21.

C. Claim Construction for the '002 Patent

CPT requests construction of 13 claim terms listed in CPT's Proposed Claim Construction, attached as Exhibit 2.

1. "Interconnecting Substantially All of Said Row Lines to One Another"

CPT's Construction: "Electrically connecting with conductors all, or nearly all, of row lines to one another."

The term "interconnecting" appears in claims that embody an outer guard ring, including claims 1-9 and 12-16.[5] The parties do not seriously dispute the meaning of "interconnecting." LPL says its means "shorting." *See* Ex. 2. This construction is insufficient because "shorting" is a term of art that, absent electrical training, is not understandable. Furthermore, the various uses of the term "shorting" render its precise meaning vague and ambiguous even to an artisan. Howard Decl. ¶ 21. A precise meaning is best conveyed as "electrically connecting with conductors."

All or nearly all of the row lines should be interconnected together, and "substantially all" should be so construed. The word "substantially" in patent law denotes approximation. *Liquid Dynamics Corp. v. Vaughan Co.*, 355 F.3d 1361, 1368 (Fed. Cir. 2004) ("words of approximation, such as generally and substantially, are descriptive terms commonly used in patent claims to avoid a strict numerical boundary to the specified parameter.") (Internal quotations omitted). The phrase "substantially all" must be interpreted in light of intrinsic evidence including the claim language, the specification, and the prosecution history. *Vitronics*, 90 F.3d at 1582-83.

The specification of the '002 patent describes "serially" connecting together via "jumpers" all gate pads (or source pads). Ex. 1, 8:5-8; Fig. 5A, *supra*. "Jumpers" are simply

[5] Dependent claims such as claims 2-9 and 13-16 do not contain this phrase *per se*, but acquire this limitation through claims 1 or 12.

shorting wires or strips of connectors.[6] *See* Fig. 7A. Thus, the specification only teaches a situation where all of the rows are connected together serially by jumpers, as illustrated in Fig. 7A. The specification does not explain whether any of the row lines can be left out of the interconnected group, and how to protect a row line if it is not interconnected with other row lines. Thus, "substantially all" should mean "all or nearly all."

LPL disagreed with this construction of "substantially all," but declined to offer an alternative. However, CPT's construction makes sense in light of the intended function of the interconnection of rows. The purpose of such a connection is to short the rows together and then couple the group of interconnected rows to the outer guard ring through a resistor, as illustrated in Fig. 7A, *supra.* If a significant number of row lines are left out and not connected to the interconnected group, these rows would not be protected properly by the outer guard ring. Thus, "substantially all" should mean "all or nearly all." Nothing in the specification and prosecution history suggests otherwise.

2. "Interconnecting ... Substantially All of Said Column Lines to One Another"

CPT's Construction: "Electrically connecting with conductors all, or nearly all, of the column lines to one another."

This phrase should be construed similarly to the phrase regarding rows discussed above.

3. "Electrostatic Discharge"

CPT's Construction: "Flow of electrical current caused by a build-up of static electrical charges."

The specification states that, "[d]uring manufacture of the device **10**, electrostatic discharge can occur when a high static electric potential is coupled across at least one pair of the gate lines **18** and the source lines **20**," Ex. 1, 4:46-49, and that "[a]n internal ESD guard ring can be formed, which provides a discharge path for static potential applied across the row and column line of the display." *Id.*, 2:54-57. Thus, "electrostatic discharge" is caused by static buildup between rows and columns.

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[6] Ex. 6 ("Jumper: 3. *Electricity*. A short length of wire used temporarily to complete or by-pass a circuit.").

4. "Outer Electrostatic Discharge Guard Ring"

CPT's Construction: "A ring of conductor, located external to the inner electrostatic discharge guard ring if the two rings are used together, for draining off electrostatic buildup to prevent electrostatic discharge."

The phrase "outer electrostatic discharge guard ring" is not an ordinary term or a term of art. Howard Decl. ¶ 25. Thus, a person of ordinary skill in the art can only understand this term based on the description provided by the specification and prosecution history. *See Telemac Cellular Corp. v. Topp Telecom, Inc.*, 247 F.3d 1316, 1326 (Fed. Cir. 2001) ("Because the term 'complex billing algorithm' does not have an ordinary meaning, and its meaning is not clear from a plain reading of the claim, we turn to the remaining intrinsic evidence, including the written description, to aid in our construction of that term.")

As discussed in Section III.B, *supra,* the patent describes two types of ESD rings: a permanent internal ring that remains after the manufacturing process is completed and a removable external ring that is removed at the end of the manufacturing process. The specification makes it clear that the outer and inner rings "can be utilized separately or together." Ex. 1, 8:55-57. The term "outer electrostatic guard ring" is thus used by the patent to convey the fact that this guard ring is located external to the "internal guard ring" when both rings are used on a single panel. *Id.,* 2:54-68, 7:61-8:2.

LPL's proposed construction of "outer electrostatic discharge guard ring" requires the ring to be "located outside the active matrix display." Ex. 2. LPL's definition finds no support in the intrinsic evidence. First, the phrase "outer" denotes a comparative rather than absolute position. It simply means that the relative position of the "outer" ring is external to the "inner" ring. The specification fails to describe the location of the outer guard ring, other than its location as external to the inner ring. How "external" a ring must be located to be called an "outer" ring or how "internal" a ring must be located to be called an inner ring is not specified. LPL apparently bases its construction on the '002 patent's Fig. 7, a preferred embodiment. Ex. 1, Fig. 7. Fig. 7 is dimensionless and therefore is meaningless as to the outer guard ring's definitive physical location. LPL's construction impermissibly imports a preferred embodiment's description. The patent itself does not impose any location restriction on the term "outer electrostatic discharge guard ring," other than the fact that the outer ring is external to the inner ring.

5. "Resistance" Means Resistor

CPT's Construction: "A resistance, as it is used in the claims, means a resistor, which is a circuit element that has a specified resistance to the flow of electrical current. A resistance does not include switching elements such as transistors and diodes."

a. The Intrinsic Evidence Supports CPT's Construction

"Resistance" ordinarily means a physical property or characteristic of a material or device that impedes the flow of electrical current. *See* Ex. 3 (The IEEE Dictionary) ("Resistance: The physical property of an element, device, branch, network, or system ...."). But, both the specification and the prosecution history indicate that the patentee uses the word "resistance" differently from its ordinary meaning, and uses the word synonymously with "resistor."

"Resistance" as used in the patent has the same meaning as "resistor," which is a circuit element that has a specified resistance to the flow of electrical current. *Id.* ("Resistor: An element within a circuit that has specified resistance value designed to restrict the flow of current.")

The patent refers to the use of "a resistance" in the following context:

> The line **210** is connected to the other set of gate or source lines by a shunt line **224**, a shunt transistor **226** and a large resistance **228**, such as 100 K ohms (illustrated schematically).

Ex. 1, 8:23-27 (emphasis added). The phrase "a large resistance" means a circuit component that provides a large (and thus specified) resistance, which is the definition of a resistor. In the schematic shown in Figure 7 of the patent, the "large resistance **228**" is represented by the symbol,  , which is the universal circuit symbol for a resistor. *See* Ex. 1, Fig. 7, item 228; Howard Decl. ¶ 23.

The prosecution history contains similar evidence. In an office action response, the patentee discussed a prior art reference, U.S. Pat. No. 4,455,739 to J. Hynecek ("Hynecek"). *See* Ex. 4 (relevant part of the prosecution history of the '002 patent). The patentee states that "Hynecek removes the interconnect **4** between devices **3**, but does not provide row and column line connections or remove such connection if resistance **11** is taken to be such a connection." Ex. 4, Proposed Response, p. 2 (emphasis added). Again, the patentee used "resistance" to mean a circuit component. This circuit component that it calls "resistance **11**" in Hynecek is actually referred to as "resistor" or "resistance element" by Hynecek itself:

> The resistance element **11** is connected to ground or a reference, usually the device substrate, through a metallization contact **12**. Prior to the metallization step when the contact is made between the resistor and the reference, the resistor serves as a connection from the gate 7 to the border area.

Ex. 5 (Hynecek), 2:50-55 (emphasis added).

b. LPL's Construction of "Resistance" is Indefinite and Contradicts the Intrinsic Evidence

LPL desires to construe the term "resistance" to mean "a component used to cause a voltage drop." By adopting "component" as part of its definition, LPL also departs from the term's ordinary meaning. LPL, however, broadly defines "resistance" to cover anything that may cause a voltage drop during current flow, which renders the limitation indefinite.

Nearly all circuit components "cause a voltage drop during current flow." Howard Decl. ¶ 23. In fact, LPL's definition of "resistance" covers all circuit components other than, for example, a superconductor wire operating at an extreme cold temperature. Howard Decl. ¶ 23. LPL's construction thus renders "resistance" indefinite because the term could mean any circuit element ranging from conductor to transistor to a capacitor, because all of them can "cause voltage drop during a current flow," thereby erasing the limitation "via a resistance" from the claim.

Section 112 of the Patent Act requires that a patent claim "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2. "[T]he primary purpose of this requirement is to guard against unreasonable advantages to the patentee and disadvantages to others arising from uncertainty as to their [respective] rights." *Athletic Alternatives, Inc. v. Prince Mfg., Inc.*, 73 F.3d 1573, 1581 (Fed. Cir. 1996) (second alteration in original)(Internal quotations omitted). Under LPL's construction of "resistance," the public would be put at a great disadvantage because it would be impossible to know for sure what circuit component this limitation covers. *See id.* (when there is an ambiguity as to whether a term should have a narrower or broader meaning, the public notice function of a claim is better served by adopting the narrower meaning of a term).

LPL's definition also runs afoul of the intrinsic evidence. In the specification, the patentee distinguishes "resistance" from "transistor" and other "switching elements." In the context of describing the connection from the "pickup pad" to the outer ring, the patent states

that "the line **210** is connected to the other set of gate or source lines by a shunt line **224**, a shunt transistor **226** and a large resistance **228** ...." Ex. 1, 8:24-27. By using the terms "transistor" and "resistance" together for two different circuit components, the specification tells a person of ordinary skill in the art that "transistor" is not a "resistance."

Further, the specification uses "resistance" exclusively for the coupling between rows and columns to the outer ring. *Id.*, 8:18-39. In contrast, "transistors" or "switching elements" are used for the couplings between the inner ring and rows and columns. *Id.*, 7:61-68. There is no hint that "resistance" and "transistor" are interchangeable.

The claim language also makes it clear that the coupling of rows and columns to the outer ring are "via a resistance," and the couplings to the inner ring are "via shunt switching elements." *Cf.* claim 1 and claim 8 of Ex. 1. The specification uses explicit broadening language for the shunt switching elements, stating "[t]he shunt transistors ... also can be formed as other active switching elements, such as diodes." In contrast, the patent lacks any statement that implies that "resistance" means anything other than a resistor.

Finally, if "resistance" can include a short wire or a diode, claim 1 is invalid because the prior art teaches removable ESD rings coupled to rows and columns through conductors or diodes. Howard Decl. ¶ 15.

c. LPL's Construction Impermissibly Injects an Intent Element into Claim Meaning, and Excludes the Preferred Embodiment

LPL's construction uses the phrase "used to cause voltage drop." This injects an intent element into the claim construction. But "[t]he scope of claim language cannot depend solely on the unrestrained, subjective opinion of a particular individual purportedly practicing the invention." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1350 (Fed. Cir. 2005) (finding the term "aesthetically pleasing" indefinite because of its subjective criteria).

LPL's construction of "resistance" turns solely on the subjective intent of the accused infringer, *i.e.*, whether he or she intends to use a component to cause a voltage drop, regardless of the structure and function of the component. The Federal Circuit explicitly rejected a similar attempt to introduce a subjective element into claim construction. *See Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1353 (Fed. Cir. 2001) ("We are not prepared to assign a meaning to a patent claim that depends on the state of mind of the accused infringer."). Because any electronic component will cause a voltage drop, a

member of the public could be accused of practicing this limitation no matter what device he uses, depending solely on his intent.

The specification states the purpose of using the "resistance" is to limit current instead of causing voltage drop. Ex. 1, 8:34-35 ("The resistance **228** minimizes the discharge current surge."). Of course, a voltage drop occurs whenever a current passes through any electronic pathway. However, nowhere in the specification is there any description that the "resistance **228**," the only preferred embodiment, is "used to cause a voltage drop" as stated by LPL's proposed construction. Thus, other than impermissibly injecting an intent element into the meaning of "resistance," LPL's interpretation would even exclude the preferred embodiment. The construction is thus improper for that reason alone. *Pfizer, Inc. v. Teva Pharms. USA, Inc.*, 429 F.3d 1364, 1374 (Fed. Cir. 2005) ("A claim construction that excludes a preferred embodiment . . . is 'rarely, if ever, correct.'") (alteration in original).

6. "Coupled to Said Interconnected Row and Column Lines via a Resistance"

CPT's Construction: "Linked through one or more resistors to the interconnected column lines and to the interconnected row lines."

There cannot be any reasonable dispute that "coupled to" means "linked to." Ex. 6 (American Heritage Dictionary) (Couple: "4. *Elec.* To link (two circuits or currents) as by magnetic induction.). The real issue is defining to which component it is linked. The phrase "said interconnected row and column lines" refers back to the previous limitation "interconnecting substantially all of said row lines to one another and substantially all of said column lines to one another." Thus, the element contains two distinctive sub-limitations: coupled to (1) said interconnected row lines, and (2) coupled to said interconnected column lines.

7. "Removing Said Guard Ring and Row and Column Interconnections"

CPT's Construction: "Electrically disconnecting the interconnections between rows and between columns, and electrically disconnecting rows and columns from the outer guard ring."

The only pertinent difference between CPT's and LPL's constructions is that LPL construes "removing" to mean physical removal while CPT's construction requires only electrical disconnection, whether by physical removal or otherwise.

Both the plain meaning and the intrinsic evidence support defining "removing" to mean removing a component from an electronic circuit. To one of ordinary skill in the art, removing a circuit part or component means disconnecting the part from the circuit, which could be accomplished by either physically removing the part from the circuit or disconnecting its connections from the circuit. Howard Decl. ¶ 24. Thus, "electrically disconnecting" is a broader concept than "physically removing" in the electronic circuit context. The specification provides no evidence that the patentee intended to limit the word "removal" to only physical removal. In fact, the specification describes "removing" as a disconnecting process:

> The L-shaped corner pad **208** can be grounded and also provides the alignment for the scribe lines **204** and **206**, which are utilized to disconnect the source and gate jumpers and the guard ring **200** after the structure is completed.

Ex. 1, 8:11-16 (emphasis added).

LPL relies on the patent's disclosure of scribe lines to support its physical removal construction. This is incorrect. LPL's mistake stems from its error of construing scribe line to mean cutting lines. To one of ordinary skill in the art, however, scribe lines can be made either with a metal tool to disrupt the conductor patterns or with a diamond cutter for fracturing the glass substrate. Howard Decl. ¶ 26; *see also* the construction of "scribe line," *infra*. The patent never states there should be an actual physical fracture of the edges of the glass substrate along the scribe lines. Instead, it uses the phrase "disconnecting" to describe the scribing process. Ex. 1, 8:11-16. Thus, to one of ordinary skill in the art, the term "removing" should mean electrically disconnecting, which could either be physically removing a part from the circuit or breaking its connections with the rest of the circuit.

8. "Pickup Pad"

CPT's Construction: A pad located at the corner region of a backplane for aligning the frontplane and backplane.

The term "pickup pad" appears in several asserted claims including claims 3-6, and 14-17. This term is not common terminology in the LCD industry. Howard Decl. ¶ 27. Thus, a person of ordinary skill in the art can only discern the meaning of the term based on the intrinsic evidence. *Telemac Cellular Corp.*, 247 F.3d at 1326; *Novartis Pharms. Corp. v. Abbott Labs.*, 375 F.3d 1328, 1334 (Fed. Cir. 2004) ("If the disputed claim term is a term with no previous meaning to those of ordinary skill in the prior art[,] [i]ts meaning, then,

must be found [elsewhere] in the patent.") (internal quotations omitted) (alternations in original).

The specification does not provide any explicit definition of the term. It simply describes a "backplane pickup contact pad **216**" that "includes a corner **218** for aligning the back plane with the front plane." Ex. 1, 8:18-26. The specification goes on to describe a shunt pathway from the "pickup pad" to the outer ESD guard ring, via a "shunt switching element" and "a resistance," as illustrated in Fig. 6, *supra*. *Id.*, 8: 20-30. Thus, a pickup pad should be "a pad located at the corner region of a backplane for aligning the frontplane and backplane." Howard Decl. ¶ 27.

LPL's proposed claim construction defines the pickup pad as a conductor pad used for electrically connecting the front and back planes. This definition is neither reflected by the ordinary meaning of the phrase, nor described by the patent. As used by LPL the term is indefinite because it is never properly defined by the patent. Otherwise, the pickup pad should be narrowly defined by the specification's disclosed structures.

9. "Shunt Switching Element"

CPT's Construction: "A device that is capable of switching between on and off states (e.g., a transistor or diode) to open or close a by-pass for diverting electrical current."

The "shunt switching element" here is used to connect a pickup pad to the resistor in claim 1. The specification describes this connection as through "a shunt transistor **226**." Ex. 1, 8:22. A transistor can switch between on and off, as described in Section III.A, *supra*. This switching property of a transistor is also clear from the specification. *See id.,* 7:37-39 ("Instead, the transistor **146** will turn on followed by the transistor **150**, shorting the potential from the pad **122** ...."), 7:65-68. ("The low value of the normal operating voltages does not turn on the transistors **194** and **196**, which do [sic] not effect [sic] the normal display operation.") (emphases added). CPT's definition also comports with the ordinary meaning of electronic "switching," as evidenced by the relevant definition of "switch" by the IEEE dictionary:

> Switch: (11) An electronic device connected between two data lines. A switch can exist in one of two states, referred to as "open" and "closed." The state at any time depends on a digital control variable. When the switch is open, the pathway between the two data lines has a very high impedance (ideally infinite) so that signals appearing on the data lines should be completely independent. When the switch is closed, the pathway between the two data lines has a very low

> impedance (ideally zero) so that signals on the two data lines should be identical.

Ex. 3.

Although a diode may not always be called a switching device, this ambiguity is resolved in this case because the patentee clearly defined the term "switching device" to include diodes. Ex. 1, 8:57-59 ("The shunt transistors **146**, **194** and **222**, etc. also can be formed as other active switching elements, such as diodes."). Thus, the definition of "shunt switching element" requires coverage for diodes as proposed by CPT.

10. "Corner Pad"

CPT's Construction: "A pad of metal or other conductive materials that is located at the corner of an outer guard ring, and electrically connected with the outer ring."

Like "pick-up pad," "corner pad" is not common terminology in the LCD industry. Howard Decl. ¶ 28. It is a term coined by the patentee. A person of ordinary skill in the art can only understand the term based on the description given by the specification. *Id.*

The specification describes two features of corner pads. The first requires the pads to be connected to each other by the outer ring and grounded to provide an outlet for electrostatic discharge from the outer ring. Ex. 1, 8:8-12. The second feature requires that the pads provide the alignment for the scribe lines used to disconnect the outer ring at the end of the fabrication process. *Id.,* 8:11-16. Thus, a "corner pad" is part of the outer guard ring for providing ground access for the ring and alignment for the disconnection of the outer ring.

LPL construes "corner pad" as "a reference mark for cutting." This definition is not suggested by the ordinary meaning of the phrase, nor is it supported by the specification. The specification describes the "corner pad" used for aligning the scribe lines. But, as discussed in Term No. 7, *supra*, and Term No. 11, *infra*, "scribe lines" do not necessarily mean cutting lines. Thus, the specification does not support the corner pad as "a reference mark for cutting." Even assuming *arguendo* "scribing" means cutting, the only such cutting supported is for the removal of the outer ring and the row and column interconnections, not for general cutting such as dividing glass substrates. LPL's definition fails to make such a distinction. Moreover, LPL's construction fails to address the structural description of the corner pad, *i.e.*, it is located at a corner of the outer ring and electrically connected to the ring. Thus, LPL's definition is overly broad and unsupported by the intrinsic evidence.

11. "Scribe Line"

CPT's Construction: "A predefined line along which the glass substrate can be marked with a sharp tool either to disconnect the conductor patterns along the line or to initiate the fracture of the glass substrate along the line."

The ordinary meaning of "scribe" is "to mark with a scriber." Ex. 6. A "scriber" is "a sharply pointed tool used for marking lines on wood, metal, ceramic, or the like." *Id.* This is exactly how the phrase is used in the IC and LCD industry, where a pointed tool is used to mark the glass substrates along a predefined line. Howard Decl. ¶ 26. There are normally two purposes for scribing the substrate. One is to subdivide them, which requires a diamond cutter to mark the scribe line for the subsequent fracturing along the line. The other purpose is to disrupt the conductor patterns on the substrate to electrically disconnect certain elements at the end of the manufacturing process. *Id.* For the latter purpose, a metal scriber is normally used. *Id.*

12. "Aligning Scribe Lines with Said Corner Pad for Removing Said Outer Guard Ring and Row and Column Intersections"

CPT's Construction: "Aligning each scribe line with one edge of the corner pad for disconnecting the outer guard ring and the row and column interconnections."

The term appears in claim 7, which depends from claim 1. The phrase "row and column intersections" appears to be indefinite. First, it appears to lack antecedent basis. Second, the plain meaning of the phrase does not make any sense, because "row and column intersections" are essential to the pixels of an LCD panel. Removing them at the end of the manufacturing process, as suggested by the apparent meaning of the limitation, would certainly destroy the panel that has just been made. This indefiniteness can only be eliminated if this Court finds that one of ordinary skill in the art knows that "intersections" means the "interconnections" of claim 1.

13. "Inner Electrostatic Guard Ring"

CPT's Construction: "A ring of conductor, located internal to the outer electrostatic discharge guard ring if the two rings are used together, for draining off electrostatic buildup to prevent electrostatic discharge."

As in the case of outer guard ring, the word "inner" in the phrase "inner guard ring" indicates the relative position of this ring to the outer guard ring. When the two rings are used separately, however, there is no absolute location requirement for the inner guard ring. The

specification requires only that the "internal ESD guard ring is formed around the pixels **112**, **114**, **116**, and **118**." Ex. 1, 7:16-18. There is no indication of how internal this ring has to be to remain an "inner" ring in the absence of an outer ring. Therefore, the word "inner" merely means the relative position of the "inner" ring to the "outer ring."

D. Claim 18 is Indefinite for Depending from the Wrong Independent Claim

CPT's Alternative Construction: If the Court does not find claim 18 indefinite, claim 18 should be corrected to depend from a claim that requires an outer ring, such as claims 1-9 or claims 12-16.

Claim 18 states:

> The method as defined in claim 10 including forming a corner pad on at least one corner of the display and aligning scribe lines with said corner pad for removing said outer guard ring and row and column intersections.

As drafted, claim 18 makes no sense. First, it adds a corner pad element to claim 10. As stated above, corner pads are located at the corners of the outer guard ring and are electrically connected to the outer guard ring. Claim 10 does not contain an outer guard ring element. This reason alone renders claim 18 indefinite.

Claim 18 also requires the limitation "aligning scribe lines with said corner pad for removing said outer guard ring and row and column intersections." This element lacks antecedent basis because independent claim 10 does not have any outer ring or any row and column interconnections.[7]

A Court can correct a drafting error "only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003) (finding claim indefinite because the nature of the error is not clear from intrinsic evidence and it was equally reasonable to delete a phrase or to add a missing word). This district recently followed *Novo Industries* and found a drafting error uncorrectable because the intrinsic evidence did not provide any reasonably clear guidance on what was intended.

[7] Like claim 7, the word "intersections" should mean "interconnections."

Microstrategy Inc. v. Bus. Objects Americas, No. 03-1124, 2006 U.S. Dist. LEXIS 2136, at *29-30 (D. Del. Jan. 23, 2006).

The error in claim 18 is similar to the errors in *Novo Industries* and *Microstrategy*, in that the specification and prosecution history provide no clue as to which claim it should have depended from. From the elements "corner pad" and "said outer guard ring," claim 18 was intended to depend from a claim with an outer guard ring, a requirement that fits with claims 1-9 and 12-16.

Section 112 ¶2 requires a claim to particularly point out and distinctly claim the subject matter which the applicant regards as his invention. A dependent claim like claim 18 must incorporate all the claim limitations of the claim from which it depends. Without knowing the exact claim from which claim 18 should have depended, it is impossible for the public to ascertain all the elements of claim 18. This is a situation very similar to those encountered by the *Novo Industries* and *Microstrategy* courts where more than one reasonable way of correcting the drafting mistake existed. Here, it is equally reasonable to let claim 18 depend from any of the outer ring claims, including claims 1-9 and 12-16. Claim 18 is indefinite.

IV. CLAIM CONSTRUCTIONS FOR THE '121 PATENT

The '121 patent, Ex. 7, is directed to a tape carrier package ("TCP") for mounting a driving integrated circuit ("D-IC") to an LCD and the Printed Circuit Board ("PCB"). The claimed invention is said to be an improvement over the TCPs in the prior art because it is capable of reducing a brightness difference of the LCD screen caused by thermal pressing the TCP onto the LCD during the assembly process due to the presence of a "dummy" bending part where a portion of the base film is removed at a location where the TCP is not folded.

A. Background Technology

1. LCD Modules

There are several major components that make up a typical LCD module, including the liquid crystal panel, the backlight, the control printed circuit board and the tape carrier package.

The LCD panel, the part of an LCD module that is visible when looking at a laptop screen or computer monitor, is a glass "sandwich" assembly consisting of an upper and lower glass substrate, with the liquid crystal material and the internal connections to each pixel in

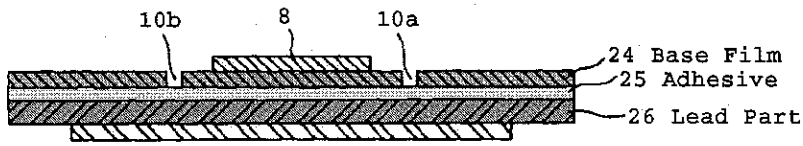
between. Holmes Decl.[8] ¶¶ 9-10. The backlight is a uniform light source that is positioned behind the liquid crystal panel. Light from this light source is then selectively passed through the pixel(s) of the liquid crystal panel. *Id.*, ¶ 10. The control PCB generates control signals for the proper activation of the pixels. *Id.* The TCP is a flexible interconnection component, made of a base film, an adhesive layer and a metal layer that provides electrical connection between the control PCB and the edge of the lower glass substrate of the liquid crystal panel. *Id.* Alternatively, other types of interconnection components may be used instead of TCPs. *Id.*, ¶¶ 24-26.

2. Tape Carrier Packages

As explained above, a TCP comprises a tape-form base film layer, an adhesive layer and a metal layer within which electrical conductors are formed. *Id.*, ¶¶ 10, 13, 23-26. For example, Fig. 3 from the '121 patent, reproduced in pertinent part below, shows a sectional view of a conventional TCP. This figure shows that TCPs are constructed with a base film **24**, an adhesive **25** and a lead part **26** also called the metal layer. The D-IC is depicted as item **8**.

FIG. 3

CONVENTIONAL ART



Early implementations of the TCP used a continuous strip of the base film material that was too rigid to be bent into a tight "U" shape without risk of damaging the fragile pad connections. *Id.*, ¶ 12. To address this issue, early enhancements to the TCP design included removing a strip of the base film material at the desired bending point. Ex. 9, U.S. Patent No. 5,719,752, 1:33-37. This increased the flexibility of the TCP where it was to be bent. In the '121 patent, this section where the base film is removed is referred to as the "bending part" of the TCP. Ex. 7, 2:15-20. There may be one or more bending parts on a TCP depending on the number of bends required for a particular LCD design. Holmes Decl. ¶ 14. For the reasons discussed below, in addition to allowing the development of more compact designs,

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[8] Declaration of David Michael Holmes in Support of Defendants' Claim Construction (hereinafter "Holmes Decl.")

the use of bending parts also reduced the stress that the TCP exerted upon the bonding area of the input and output pads. *Id.*

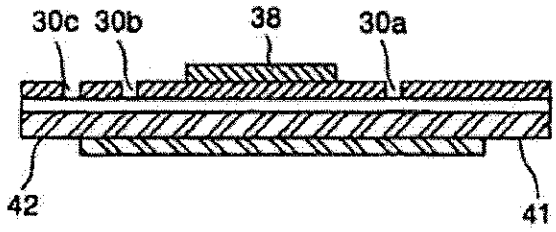
As the design of LCD displays evolved, reliability issues associated with maintaining the integrity of the connection of the TCP output pad to the lower glass substrate arose. *Id.*, ¶ 15. This connection point was subject to failure due to certain mechanical "peeling forces" and thermal stresses that were being applied during assembly and/or operation of the LCD. To address this problem, one or more additional base film material strips were removed from an area close to the input and/or output pads where the TCP is not bent. *Id.* This created an additional area close to the pads that was flexible, which reduced the mechanical and thermal stresses exerted on the pad bonding area, both during and after assembly. *Id.*

Removing the base film in this non-bending area of the TCP reduced thermal stress and provided additional flexibility, reducing stresses that would be generated by different rates of thermal expansion of the various LCD components. *Id.*, ¶ 16; Ex. 9, 10:52-57. Peeling stress was also reduced. During assembly of the LCD display, certain bending and folding of the TCP is required. The removal of base film in this non-bending area provided a flexible joint close to the pad bonding area, thus reducing the tendency to peel the TCP loose from the liquid crystal lower glass substrate or the attached PCB. Holmes Decl. ¶¶ 15-16.

B. The Disclosure by the '121 Patent

The '121 patent discloses a TCP with a dummy bending part that is said to be capable of reducing a brightness difference of the LCD screen caused by thermal pressing the TCP onto the LCD during the assembly process. Ex. 7, 4:11-17. According to the patent, the dummy bending part distributes a stress applied to the LCD according to a thermal expansion of the pad part by removing the base film between the pad part and the integrated circuit chip. *Id.*, 3:41-49. The patent further describes the location of this dummy bending part to be where the TCP is not folded. *Id.*, 3:56-59. Figure 9 of the patent shows one embodiment of the invention and the location of the bending parts (**30b** and **30a**) and the dummy bending part (**30c**).

FIG. 9



The '121 patent attributes the dummy bending part and its location as the point of distinction over the prior art. According to the patent, "the base film close to the output pads adhered onto the glass substrate of the liquid crystal panel is removed, so that a stress applied to the glass substrate by the TCP is distributed and thus reduced." *Id.*, 6:8-12. Also, according to the patent, the removal of a portion of the base film where the TCP is not folded is called a dummy bending part and serves to distribute the stress applied to the LCD when the TCP is attached to the LCD glass substrate by thermal pressing. *Id.*, 4:11-17. The result of reducing the stress applied to the glass substrate is said to also reduce the cell gap difference between the adhesive area and the non-adhesive area of the TCP. *Id.*, 6:13-21. This cell gap is located between the areas where the TCP is adhered to the edge of the lower glass substrate. *Id.*, 2:33-38. Accordingly, the patent states that if this cell gap is maintained between the adhesive area and non-adhesive area of the TCP, a reduction in a brightness difference of the LCD screen may result, although the patent offers no supporting data to substantiate this claim. *Id.*, 6:12-22.

Thus, in order to accomplish this purported result, the embodiments described in the specification of the '121 patent require the dummy bending part to be located where the TCP is not folded. *Id.*, 3:56-61. All of the figures in the '121 patent depict the dummy bending part as being located close to or on the output pad part of the TCP, which is adhered to the edge of the lower glass substrate.

C. Claim Construction for the '121 Patent

CPT requests construction of 8 claim terms, listed in CPT's Proposed Claim Construction, attached as Exhibit 8.

1. "Tape Carrier Package" (TCP)

CPT's Construction: "An assembly used to connect a driving integrated circuit (D-IC) to the liquid crystal display (LCD) and the printed circuit board (PCB) having a base film, an adhesive layer and a metal layer."

This construction is based on the plain and ordinary meaning of the term as used in the '121 patent and is consistent with how the term would have been understood in 2000 by one skilled in the art. The intrinsic record supports CPT's construction of TCP. Referring to Figure 1A, the '121 patent defines the TCP as having three layers wherein "an adhesive **25** is coated on a base film **24** of the TCP **10**, and a lead part [metal layer] **26** is adhered thereon." *Id.*, 2:5-7. The embodiments of the invention describe a TCP having a base film, adhesive layer and lead part or metal layer and recites, "Output pins of the D-IC **38** are connected to a lead part **46** adhered onto the base film **44** by means of an adhesive **45**." *Id.*, 5:7-10.

Figures 9 and 11 depict a cross sectional view of two embodiments of the TCP as claimed. Each of these figures identifies the TCP as including a base film, an adhesive layer, and a lead part or metal layer. Thus, the specification of the '121 patent is consistent with CPT's construction.

CPT's proposed construction for TCP also is consistent with how those skilled in the art define the term. Holmes Decl. ¶¶ 23-26. Those of ordinary skill in the art in 2000 would have understood a TCP to include a base film, an adhesive layer and a metal layer. *Id.*

LPL's construction of TCP neglects the teachings of the patent and the term's common usage in the art. Under LPL's construction, any apparatus that connects an integrated circuit chip to the liquid crystal panel and the PCB would be considered a TCP. This is not correct. A TCP is one of many different methods for connecting an integrated chip to the liquid crystal panel and the PCB, and consists of a base film, an adhesive layer and a metal layer. *Id.*, ¶¶ 9, 13, 23-26. Other methods, which were known to those of ordinary skill in the art at the time the '121 patent application was filed, include, chip on board (COB), chip on film (COF), and chip on glass (COG) among others. *Id.*, ¶¶ 24-25.

Koninklijke Philips Electronics.NV ("Philips"), one the two owners of LPL via a joint venture with LG Electronics, has recognized that a TCP is distinct from these other connection methods. *See* Ex. 15, 2001 presentation describing differences between TCP and COF. These assemblies are distinct from the TCP disclosed in the '121 patent. Holmes Decl. ¶¶ 23-26. For example, as shown in the Philips' presentation, the COF connection method does not contain an adhesive, while TCPs do contain an adhesive. Ex. 15.

One of ordinary skill in the art would not define TCP broadly in the way proposed by LPL. Holmes Decl. ¶ 25. There is no basis for modifying the unambiguous language of the claim term TCP to encompass a broader and unsupportable meaning as proposed by LPL. The term TCP should be given the same meaning in the claim as it is given in the

specification. "In general, technical terms are deemed to have the same meaning in the body of the specification as in the claims." *Fromson v. Anitec Printing Plates, Inc.*, 132 F.3d 1437, 1442 (Fed. Cir. 1997), *limited in part*, *Cybor Corp. v. FAS Techs. Inc.*, 138 F.3d 1448, 1454 n.3 (Fed. Cir. 1998) (*en banc*).

2. "Input Pad Part" and "Output Pad Part"

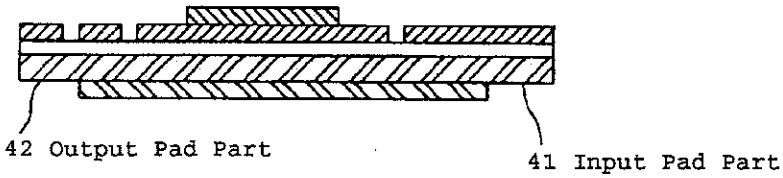
*CPT's Construction of "**input** pad part":* "Area of the tape carrier package that is connected to the output signal wiring of a printed circuit board."

*CPT's Construction of **output** pad part:* "Area of the tape carrier package that connects to the pads formed on the edge of the lower glass substrate of the LCD."

CPT's proposed constructions are consistent with the use of these terms in the patent. As described in the specification and shown below, the **input** pad part relates to the pads formed at the end of the TCP that are connected to the output signal wiring of the PCB. Conversely, the **output** pad part relates to the pads formed at the opposite end of the TCP, which are connected to the lower glass substrate of the LCD panel. As shown in the specification, the **input** and **output** pad parts, therefore, relate to the pads formed on the ends of the TCP and exist at the locations where the TCP is connected to or adhered to the PCB (**input** pad part) and the lower glass substrate of the LCD panel (**output** pad part).

- "The **input** pad part is connected to an output signal wiring of the PCB while the **output** pad part is connected to the gate line or the data line formed on a lower glass substrate." Ex. 7, 2:12-15 (emphasis added).
- "A printed circuit board connected to an **input** pad part of the tape carrier package." *Id.*, 4:16-17 (emphasis added).
- "At the **input** pad part are formed pads extending from the lead part to be connected to an output signal wiring of a PCB." *Id.*, 5:11-13, 5:38-40, 5:65-67 (emphasis added).
- "The base film close to the **output** pads adhered onto the glass substrate of the liquid crystal panel" *Id.*, 6:9-10 (emphasis added).
- "A pad part extending from the integrated circuit chip to be connected to the liquid crystal display" *Id.*, 3:53-54.
- "At the **output** pad part are provided pads extending from the lead part to be connected to the pads formed at the edge of the lower glass substrate. Between the **output** pad part and the D-IC is provided the second bending part and the dummy bending part in which the base film are removed." *Id.*, 5:17-22, 5:44-50 (emphasis added).

The Figures of the '121 patent further support CPT's proposed construction. Figures 9 and 11 represent two different embodiments of the alleged invention. As shown below, in representative Figure 9 reproduced in pertinent part, the pad parts are located at the ends of the TCP:



42 is the **output** pad part (LCD) and **41** is the **input** pad part (PCB). *Id.*, 5:3-5. In Figure 11 of the '121 patent, **51** is the **input** pad part. *Id.*, 5:34-35.

CPT's constructions are also consistent with the plain and ordinary meaning of these claim terms as understood by one of ordinary skill in the art at the time the '121 patent application was filed. Holmes Decl. ¶¶ 27-32, 63-66.

LPL's proposed construction for "**output** pad part" is: an interface between the integrated circuit chip and the LCD," and its proposed construction for "**input** pad part" is: "an interface between the integrated circuit chip and the PCB." LPL's proposed constructions of these two terms ignore the teaching of the specification, which expressly defines the location of each pad part according to CPT's construction above. LPL reads the term "interface" into the claim, a term absent from the specification.

3. "Pad Part Extending From the Integrated Circuit Chip"

CPT's Construction: "The pads located at the ends of the TCP which are electrically connected to the integrated circuit chip."

This claim phrase appears in claims 1, 2 and 14. LPL has asked the Court to construe this phrase out of the different contexts in which it is used in these three claims. CPT believes that this claim phrase must be construed in the context of each of the claims in which it is used. In context, the full claim phrase in claims 1 and 2 read: "an input pad part *extending from the integrated circuit chip* and having terminals connected to the printed circuit board" and "an output pad part *extending from the integrated circuit chip* and having terminals connected to the liquid crystal panel," respectively. Ex. 7, claims 1 and 2. In context, the full claim phrase in claim 14 reads: "a pad part extending from the integrated circuit chip to be connected to the liquid crystal panel. *Id.*, claim 14. Therefore, claims 1 and

2 require both an output and input pad part that are electrically connected to the integrated circuit chip. Claim 14 requires an output pad part, but not an input pad part.

CPT's construction of this claim phrase is consistent with the specification of the '121 patent, which states that the pad parts are located at the ends of the base film where the TCP is connected to the lower glass substrate of the liquid crystal panel (**output** pad part) and the printed circuit board (**input** pad part). Holmes Decl. ¶¶ 63-66, Ex. 7, 2:9-15, 5:11-12, 5:17-19.

Further, the specification supports CPT's construction that the pad parts are electrically connected to the integrated circuit chip. With respect to the **input** pad part, the specification states that the "The TCP includes a D-IC. … Output pins of the D-IC are connected to a lead part adhered onto the base film by means of an adhesive. … At the **input** pad part are formed pads extending from the lead part to be connected to output signal wiring of a PCB." Ex. 7, 5:1-13 (emphasis added), *see also* Holmes Decl. ¶ 64. With respect to the output pad part, the specification states that, "The TCP includes a D-IC. … Output pins of the D-IC are connected to a lead part adhered onto the base film by means of an adhesive. … At the **output** pad part are provided pads extending from the lead part to be connected to the pads formed at the edge of the lower glass substrate." Ex. 7, 5:1-20 (emphasis added), *see also* Holmes Decl. ¶ 65.

One of ordinary skill in the art would not construe this claim term as proposed by LPL because the proposed interpretation states that the **output** pad part is "an interface between the integrated circuit chip and the liquid crystal panel." The term "interface" is broad and indefinite, and it could include parts other than the defined **output** or **input** pad part. Holmes Decl. ¶¶ 63-66. The specification, however, clearly states that the **output** pad part is provided at the end of the base film, which would be confined to the point of attachment to the lower glass substrate.

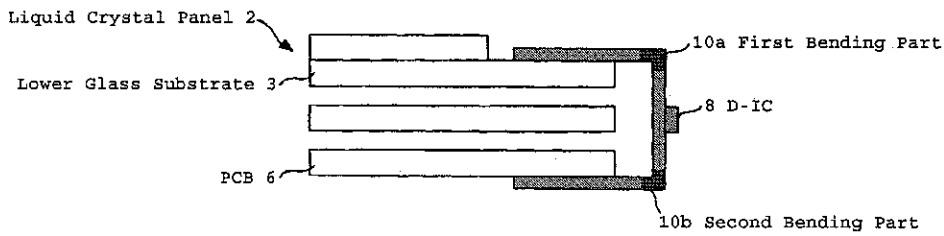
4. "Bending Part"

CPT's Construction: "Area of the tape carrier package where a portion of base film is removed where the tape carrier package is to be folded."

The parties appear to agree that a bending part is an area of the TCP where the base film is removed. LPL, however, contends that the bending part does not have to be for folding or bending, it just needs to be "bendable." LPL's proposed construction is at offs

with the plain meaning of the claim term. CPT's proposed construction adopts the plain meaning and is consistent with its use in the patent.

The term "bending part" is used in the '121 patent to refer to the specific sections of the TCP where the base film is removed to allow the TCP to easily fold so that the PCB can be attached to the rear side of the LCD panel.[9] Figure 1A of the '121 patent, reproduced in pertinent part, illustrates and confirms that the "bending part" refers to this area of the TCP:



In referring to this Figure, the specification states that "the base film is removed from the bending parts **10a** and **10b**. The TCP **10** [shown in blue] is easily bent with the aid of these bending parts **10a** and **10b**." Ex. 7, 2:18-20. Through the use of the bending parts (**10a** and **10b**) the TCP **10** allows the PCB **6** to be folded to the rear side of the LCD **2**. The specification consistently teaches that the base film is removed at the bending parts to allow the TCP to easily fold:

- "at least one bending part in which the base film at a portion where the tape carrier package is folded is removed" *Id.*, 3:54-56.
- "a first bending part provided between an input pad part and the D-IC, and a second bending part and a dummy bending part provided between an output pad part and the D-IC in parallel." *Id.*, 5:2-5.
- "Between the input pad part and the D-IC is provided the first bending part in which the base film is removed. The TCP between the PCB and the D-IC is easily bent by the first bending part." *Id.*, 5:13-17, 5:40-44.
- "Between the output pad part and the D-IC is provided the second bending part and the dummy bending part in which the base film are removed. The TCP between the liquid crystal panel and the D-IC is easily bent by the second bending part. *Id.*, 5:20-24, 5:47-52.

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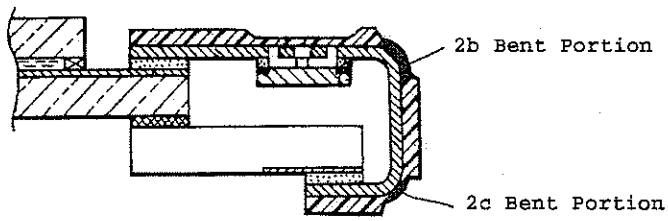
[9] The use of TCPs with portions of base film removed to allow the tape to easily fold was well known prior to the '121 patent. Numerous prior art patents, including some that were specifically cited during the prosecution of the '121 patent, discuss the removal of base film from a TCP to facilitate bending. *See* Ex. 9, U.S. Patent 5,719,752, Ex. 10, U.S. Patent 5,398,128, Holmes Decl. ¶¶ 14-16.

The prosecution history of the '121 patent, Ex. 11 (relevant portions only), also supports CPT's construction. There, the applicants explained the definition of bending part, arguing to the Examiner that, "the present invention is different from the Tagusa [U.S. Patent 5,668,700] structure in that in Tagusa, the substrate **2** is partially removed only where the wiring board is **folded** (Tagusa, Fig. 6, elements **2b** and **2c,** 14:24-55). Ex. 11, July 22, 2003 Reply to Office Action, p. 12 (emphasis added).

Fig. 6



Elements **2a** and **2b** of Figure 6, shown above, which the '121 patent applicants described as "folded," are in exactly the same position as elements **10a** and **10b** of Figure 1A of the '121 patent (*see* above), which the '121 patent specification states are the "bending parts." Therefore, consistent with its use in the specification, the argument made by the applicants during the prosecution history further establishes that the "bending part" claimed in the '121 patent refers to the area of the TCP where a portion of the base film is removed where the TCP is to be **folded**. Holmes Decl. ¶¶ 39-42.

5. "Bent Position"

CPT's Construction: "Location on the tape carrier package where the tape carrier package is folded."

Many of the claims of the '121 patent (all except for claims 5, 9 and 10) require a bending part in which a portion of base film is removed at a bent position between the dummy bending part and/or pad part and the D-IC chip. As explained above, a bending part is the area on the TCP where a portion of base film is removed where the TCP is to be folded. A bent position is the term used by the '121 patent to describe the TCP where the bending parts are located and, therefore, where the tape is folded to allow the PCB to be placed on the rear-side of the LCD panel. The claim language itself makes this clear. Claim 1 recites:

> "a first bending part in which a second portion of the base film existing at a bent position … is removed."

A bending part, therefore, must exist at a bent position. An argument that the "bent position" refers to some other location on the TCP is not supportable in light of the clear claim language, specification and prosecution history. CPT's construction is consistent with how one skilled in the art would understand this term when reading the teachings of the '121 patent. Holmes Decl. ¶¶ 43-45.

LPL's proposed construction of bent position as a "position that is not flat" is without reference to the patent's teachings. Viewed in light of the specification, as required, LPL's definition is clearly incorrect. *Fromson,* 32 F.3d at 1442. The specification and figures of the patent show that "bent position" describes the TCP at the "bending parts," and, therefore, is used to describe the TCP as it is folded so as to allow the PCB to be placed on the rear side of the LCD. That is the only bent position described in the patent. LPL's proposal that the term "bent position" should be broadly construed to include areas of the TCP that may only be slightly bent, rather than folded, does not work. The bending position described in the '121 patent is bending to such a degree as to allow the PCB to be placed to the rear-side of the LCD. Ex. 7, 1:57-2:3. Therefore, the claim term "bent position" should be construed to mean the location on the TCP where the TCP is folded.

6. "Dummy Bending Part"

CPT's Construction: "Area on the tape carrier package where a portion of the base film is removed between either the input or output pad part and the driving integrated circuit where the tape carrier package is not folded."

The term "dummy bending part" was not an ordinary term or term of art at the time of the invention. Holmes Decl. ¶¶ 33-39. Thus, a person of ordinary skill in the art would understand this term only in the context of the description provided by the patent's specification and prosecution history. *Telemac Cellular Corp.,* 247 F.3d at 1326. Here, the specification and prosecution history consistently define the dummy bending part as being formed by removing the base film between the pad part and the D-IC chip:

- "A dummy bending part is formed *by removing the base film between the pad part and the integrated circuit chip.*" Ex. 7, Abstract.
- a dummy bending part … *by removing base film between the pad part and the integrated circuit chip.*" *Id.,* 3:46-49.
- *Between the output pad part and the D-IC* are provided one or two dummy bending parts *in which the base film is removed.*" *Id.,* 6:2-5.

The clear and unambiguous language of the specification dictates that the dummy bending part must be located between the input or output pad part and the D-IC.

As the name suggests, the dummy bending part must be limited to where the TCP is not bending or folded. Otherwise, there is no difference between a "dummy" bending part and a "bending part," which the patent itself recognizes as existing in the prior art. *Id.*, 2:15-20. If the dummy bending part is not required to be in a location where the TCP is not folded, then it is not so "dumb" after all and the claim is invalid in light of the prior art.

CPT's construction is further supported by the arguments made during prosecution. The '121 patent was initially rejected by the Examiner in light of the prior art, including Tagusa *et al.* (Ex. 12) and Tajima (Ex. 10). In response, the applicants distinguished their invention on the basis of the dummy bending part existing at an area where the TCP is not folded:

> Claim 1 is allowable over the cited references in that this claim recites a combination of elements including, for example, wherein the dummy bending part is formed at a position, close to any one of the output pad part or the input pad part, **where the tape carrier package is not folded**. None of the cited references including Tajima and Tagusa, singly or in combination, discloses, teaches or suggest at least this feature of the claimed invention. Ex. 11, July 22, 2003 Reply to Office Action, p. 11; Holmes Decl. ¶ 35.
>
> Claim 5 is allowable over the cited references in that this claim recites a combination of elements including, for example, wherein the dummy bending part is formed at a position, close to any one of the output pad part or the input pad part, **where the tape carrier package is not folded**. None of the cited references including Tajima and Tagusa, singly or in combination, discloses, teaches or suggest at least this feature of the claimed invention. Ex. 11, July 22, 2003 Reply to Office Action, p. 12; Holmes Decl. ¶ 35.
>
> For example, the structure of Claim 5 of the present invention is different from the Tagusa structure **in that in Tagusa, the substrate 2 is partially removed only where the wiring board 42 is folded** (Tagusa, elements 2b and 2c in Figure 6 and column 14, lines 24-55). Ex. 11, July 22, 2003 Reply to Office Action, p. 12.
>
> Claim 14 is allowable over the cited references in that this claim recites a combination of elements including, for example, "a second portion of base film is removed at a portion **where the tape carrier package is not folded**." Ex.

> 11, July 22, 2003 Reply to Office Action, p. 12; Holmes Decl. ¶ 35.

In addition to making these arguments, original claims 1 and 5 were amended to include a specific limitation that the dummy bending part exist at an area where the TCP is *not folded*. Claim 14 already recited this limitation in its original form.

> Independent Claim 1 was amended to include the following language: "wherein the dummy bending part is formed at a position, close to any one of the output pad part or the input pad part, **where the tape carrier package is not folded**."
>
> Independent Claim 5 was amended to include: "wherein the dummy bending part is formed at a position, close to the pad part, **where the tape carrier package is not folded**."

Ex. 7, Claims 1 and 5.

The significance of this representation in the prosecution history confirms the importance of the term "dummy bending part" being construed as located in a position where the TCP is not folded. CPT's construction makes this claim term clear and unambiguous. Thus, under these circumstances, the only way to interpret "dummy bending part" is an area on the TCP where a portion of the base film is removed between either the input or output pad part and the D-IC and where the TCP is not folded. Holmes Decl. ¶¶ 33-38.

LPL's proposed construction of dummy bending part is "a bendable part of the tape carrier package where the base film is removed, which has a function other than bending." LPL's construction does not exclude a bending part from being a dummy bending part. Under LPL's construction, so long as a bending part has an additional function, other than bending, it would be included within the scope of the claim.

Further, LPL's proposed construction improperly reads in a functional limitation and must be rejected. *Ecolab, Inc. v. Envirochem., Inc.*, 264 F.3d 1358, 1367 (Fed. Cir. 2001) ("Where the function is not recited in the claim itself by the patentee, we do not import such a limitation."). LPL's construction only requires that the dummy bending part have a function "other than bending." Reading in this functional language is unnecessary, as the claims themselves state the function of the dummy bending parts. For example, Claim 1 requires: "a dummy bending part … for reducing a thermal expansion force and a thermal contraction force…" In fact, every independent claim of the '121 patent includes a specific reference to the function of the dummy bending part.

"Bendable" applies to all prior art TCPs that included bending parts where the base film is removed. Any such additional functions would be inherent. LPL's proposed construction would therefore encompass the prior art, making the claims invalid.

7. "Not Folded"

CPT's Construction: "Substantially flat area of the tape carrier package."

The claim language "not folded" appears in independent claims 1, 5 and 14. In each instance this term is used to describe the location of the "dummy bending part," as a location where the TCP is "not folded," *i.e.*, not in a "bent position" at a "bending part." CPT's proposed construction is consistent with this use, as well as with the arguments made by the applicants during the prosecution of the patent. In describing the prior art, the '121 patent applicants specifically referred to the area where base film was removed from the TCP as being the area where the TCP was to be folded. Ex. 11, July 22, 2003 Reply to Office Action, p. 12; Holmes Decl. ¶¶ 46-47. The term "folded" was used to describe the area on the prior art TCPs where the base film was removed to allow the PCB to be placed on the rear-side of the LCD. Ex. 11, July 22, 2003 Reply to Office Action, p. 12. The prior art was further distinguished over the '121 invention on the basis of not having a "dummy bending part…where the tape carrier package is not folded." *Id.* One skilled in the art, upon reading the '121 specification would understand that claim term "not folded" means the substantially flat area of the TCP and that this is a distinct area separate from where the TCP is folded to allow the PCB to be placed on the rear-side of the LCD. Holmes Decl. ¶¶ 46-47.

LPL has proposed that this term means "not making a fold." This definition is not consistent with how the term is used in the specification and the claims. As explained above, the term "not folded" was used to describe the location of the dummy bending part. The dummy bending part in all embodiments is located on the area between the pad parts and a bending part. That area is substantially flat. LPL's definition does not take this into consideration, as it must, when construing a claim term.

8. "On the Pad Part"

CPT's Construction: "On top of the output pad part."

CPT's construction of this claim term is consistent with the ordinary meaning and the intrinsic record. This language appears in claim 15 only. Claim 15 requires the dummy

bending part be "positioned on the pad part." The "pad part" referred to in claim 15 is the "output pad part," and not the "input pad part." Holmes Decl. ¶¶ 48-54.

Claim 15 depends from claim 14. Claim 14 defines the pad part, as "extending from the integrated circuit chip to be connected to the liquid crystal panel." The specification is clear that the "output pads are adhered onto the glass substrate of the liquid crystal panel." Ex. 7, 6:9-10; *see also*, Construction of output pad part and input pad part, *supra*, at pp. 24-26.

This proposed language is consistent with the ordinary meaning of the word "on." *See* Ex. 13, *The American Heritage College Dictionary,* 953 (3d ed. 1997) (defining "on" as "Used to indicate position above and supported by or in contact with: *The vase is on the table."*), *see also*, Ex. 14, *Webster's II New College Dictionary* 764 (1995) (defining "on" as "Used to indicate a position above and in contact with."). Furthermore, Courts have often interpreted there term "on" as a "function word to indicate the position over and in contact with that which supports from beneath." *See, e.g., Alpha Enters. v. Tomato Land Display Sys.*, 92 F. Supp. 2d 733, 737 (S.D. Ohio 2000) (citing *Webster's Ninth New Collegiate Dictionary,* 940 (9th ed. 1987)).

Moreover, CPT's definition is consistent with the intrinsic record. In all but claim 15, where the word "on" is found, the claims define the location of the dummy bending part to be "close to" the input or output pad part. Claim 15, however, requires the dummy bending part to be "on" the pad part. Under the doctrine of claim differentiation, there is presumed to be a difference in meaning and scope when different words are used in separate claims. *Versa Corp. v. Ag-Bag Int'l, Ltd.*, 392 F.3d 1325, 1330 (Fed. Cir. 2004). Clearly, the two terms "on" and "close to" were intended to have different meanings.

LPL proposes that the term "on the pad part" means "at or along, or in proximity to the pad part." If LPL's construction is accepted, then "close to" and "on" would mean the same thing. The intrinsic record and the ordinary meaning of the claim language unambiguously show that CPT's construction is correct and, thus, should be adopted by the Court. Holmes Decl. ¶¶ 51-54.

D. Terms That Render the Claims of the '121 Patent Indefinite

(a) "reducing a thermal expansion force and a thermal contraction force generated when thermal pressing the output pad part onto the liquid crystal panel." (Ex. 7, Claims 1 and 2).

(b) distributing a stress applied to the liquid crystal panel according to a thermal expansion of the pad part." (*Id.*, Claims 5, 8 and 13).

(c) "thereby reducing a thermal expansion force and a thermal contraction force of the base film parallel to a longitudinal direction of the integrated circuit chip." (*Id.*, Claim 14).

Each of the 6 independent claims of the '121 patent (Claims 1, 2, 5, 8, 13 and 14) include one of these three indefinite claim phrases. These claim phrases are indefinite because it is impossible to determine their scope and meaning based on a reading of the specification.

CPT's indefiniteness defense is raised here because "[a] determination of claim indefiniteness is a legal conclusion that is drawn from the court's performance of its duty as the construer of patent claims." *Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 705 (Fed. Cir. 1998). 35 U.S.C. §112 ¶2 requires the claims to "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." And the primary purpose of claim language is to give fair warning to persons in the art of what will constitute infringement. *United Carbon Co. v. Binney & Smith Co.*, 317 U.S. 228, 232-33 (1942).

Claim phrase (a) is indefinite because it is impossible to determine the scope of the claim. Nothing in the patent identifies how to calculate or determine the thermal contraction force or the thermal expansion force. The patent provides data showing the brightness differences in the prior art, but does not include any data showing improved brightness with the use of a dummy bending part. Ex. 7, 2:46-3:24. Further, the patent does not provide any data on any actual thermal contraction or thermal expansion forces. From the complete lack of support in the specification, one of ordinary skill in the art would not know how to identify or measure thermal contraction forces and/or thermal expansion forces so as to determine if a dummy bending part is functioning as required in the claims. Holmes Decl. ¶ 55-57.

Claim phrase (b) is nonsensical. It requires a dummy bending part for "distributing a stress applied to the liquid crystal panel according to a thermal expansion of the pad part." As currently drafted, this claim phrase does not make sense. One of ordinary skill in the art would not know what "distributing a stress … according to a thermal expansion of the pad part" means. *Id.*, ¶ 58-61.

Additionally, claim phrase (b) is indefinite for the same reasons discussed above with respect to claim phrase (a). Nothing in the patent identifies how to calculate or determine the

distribution of stresses that result from the thermal expansion of the pad part. The patent provides no data to allow one skilled in the art to determine if a dummy bending part is functioning as claimed in the patent.

Claim phrase (c) is similarly confusing. It requires a dummy bending part for "reducing a thermal expansion force and a thermal contraction force of the base film parallel to a longitudinal direction of the integrated circuit chip." The patent provides no supporting data or guidance from which one of ordinary skill in the art could determine whether a dummy bending part is reducing a thermal expansion force that is parallel to the integrated chip. For these reasons, this claim phrase is indefinite. Holmes Decl. ¶ 62.

To the extent the forces described in phrases (a)-(c) exist, they are inherent. During the prosecution of the '121 patent, the Examiner specifically rejected the '121 patent claims in light of a prior art reference to Tajima, (U.S. Patent No. 5,398,128) (Ex. 10), which, according to the Examiner contained all of the structural elements of the claims (*i.e*, the tape carrier package comprising the base film, the input and output pad parts, the bending parts, the dummy bending parts, etc.). Ex. 11, March 24, 2003 Office Action, p. 3. Because the prior art was thought to have all of the claimed structural elements of the claims of the '121 patent, the Examiner presumed that the claimed functional elements, such as those set out here as phrases (a), (b) and (c), would inherently exist. *Id.*

Therefore, for purposes of construing the claims to determine infringement, it is unnecessary to construe the indefinite claim phrases (a), (b) and (c). If the accused devices have all of the claimed structural limitations, the functional limitations (whatever they may be) would necessarily be inherent.

If, however, the Court determines that these claim terms can and need to be construed, then CPT proposes the following constructions:

(a) "reducing a thermal expansion force and a thermal contraction force generated when thermal pressing the output pad part onto the liquid crystal panel." Ex. 7, Claims 1 and 2.

Should be construed to mean: *"a reduction of a thermal expansion force and a thermal contraction force generated when thermal pressing the output pad part of the tape carrier package onto the liquid crystal panel."*

(b) "distributing a stress applied to the liquid crystal panel according to a thermal expansion of the pad part." *Id.*, Claims 5, 8 and 13.

Should be construed to mean: *"distributing a stress applied to the liquid crystal panel that results from the thermal pressing of the output pad part of the TCP onto the liquid crystal panel."*

(c) "thereby reducing a thermal expansion force and a thermal contraction force of the base film parallel to a longitudinal direction of the integrated circuit chip." *Id,* Claim 14.

Should be construed to mean: *"a reduction of a thermal expansion force and the thermal contraction force of the base film parallel to a longitudinal direction of the integrated circuit chip."*

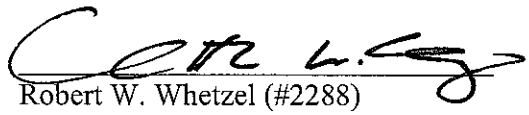
The only apparent difference between CPT's proposed construction and LPL's proposed construction appears to be LPL's refusal to admit that the thermal expansion/contraction forces must result from the thermal pressing of the output pad part of the TCP onto the lower glass substrate of the LCD.

Although this is well-supported by the specification, LPL objects to limiting this claim phrase to the thermal pressing of the "output pad part of the TCP." Apparently, LPL is taking the position that the required functional limitations can be met by thermal pressing the input pad parts to the PCB. This position is not supported. One of ordinary skill in the art would immediately recognize that the thermal pressing of the input pad part would have no effect on improving brightness consistency of the liquid crystal panel.

Further, the patent specifically states that the dummy bending part is for reducing a thermal expansion force and a thermal contraction force "generated at the time of thermal-pressing the pad onto the liquid crystal panel. Ex. 7, 4:13-16. The pads located on the end of the TCP, which are adhered to the liquid crystal panel, are the output pads. *Id.*, 5:17-20. CPT's proposed construction is consistent with the specification and the claim language.

V. CONCLUSION

For the foregoing reasons, the Court should adopt CPT's construction on all terms of the '002 patent and declare claim 18 of the '002 patent indefinite. Additionally, the Court should either adopt CPT's construction on all terms of the '121 patent or declare all the asserted claims of the '121 patent indefinite.



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Dated: March 8, 2006

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on March 8, 2006, I electronically filed the foregoing document with the Clerk of Court using CM/ECF which will send notification of such filing, and hand delivered to the following:

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I hereby certify that on March 8, 2006, I sent the foregoing document by Federal Express, next business day delivery, to the following non-registered participants:

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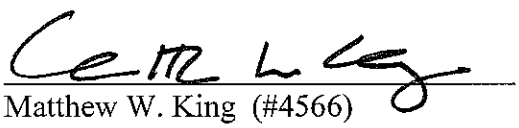

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